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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,141	03/02/2004	Kevin I. Bertness	C382.12-0178	3178
<div>27367 7590 07/27/2007 WESTMAN CHAMPLIN & KELLY, P.A. SUITE 1400 900 SECOND AVENUE SOUTH MINNEAPOLIS, MN 55402-3319</div>				
			EXAMINER	
			PIGGUSH, AARON C	
			ART UNIT	PAPER NUMBER
			2838	
			MAIL DATE	DELIVERY MODE
			07/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/791,141	Applicant(s) BERTNESS ET AL.	
	Examiner Aaron Piggush	Art Unit 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 9-45, 47-54, 56, 109, 111 and 112 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 9-45, 47-54, 56, 109, 111 and 112 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claim 39 is objected to because of the following informalities: The language presented in the amendment of claim 39 appears to be improper. In order to further prosecution of this claim, it has been interpreted to read "... wherein the battery test is used to prevent incorrectly identifying an output from the charging system test as indicating the charging system as being faulty". Appropriate correction or clarification is required.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-4, 9-14, 20-22, 25, 29-35, 38-41, 44-45, 48-52, 56, 109, 111, and 112 are rejected under 35 U.S.C. 102(e) as being anticipated by Gollomp (US 6,424,157).

With respect to claims 1 and 29, Gollomp discloses a battery charging system tester configured to test a battery charging system of a vehicle, comprising: cabling configured to electrically couple to a battery of the vehicle (col 6 ln 59-65 and seen in Fig. 7); a display configured to display information (no. 128 in Fig. 7); a microprocessor (no. 100 in Fig. 7) configured to: perform a battery test on the battery, perform a starter test on a starter of the vehicle which determines starter condition and perform a charging system test on a charging system of the vehicle which determines the charging system condition (col 3 ln 48-63, abstract, col 23 ln 1-9 and ln 46-67, col 25 ln 36-42, and col 26 ln 16-27); providing outputs related to the battery test, starter test, and charger system test (outputs eventually sent to the display in Fig. 7 and col 3 ln 50-57); and wherein the tester is portable (whether the tester is implemented in the

vehicle of Gollomp or next to the vehicle, it is reasonably interpreted as portable, also see Fig. 7).

With respect to claims 2-4, Gollomp discloses a user input configured to receive a rating standard selection which comprises a SAE standard (col 7 ln 63 to col 8 ln 5).

With respect to claims 9-12, Gollomp discloses wherein the battery test is based upon conductance, resistance, impedance, and admittance (col 4 ln 1-27 and col 1 ln 40-42). Furthermore, it is implied that the other values (conductance, impedance, and admittance) would easily be calculated/used due to the fact that conductance is the reciprocal of resistance, impedance is the summation of resistance and reactance, and admittance is the reciprocal of impedance or the summation of conductance and susceptance. Therefore, all of those values are technically based on resistance, which the reference clearly discloses.

With respect to claim 13, Gollomp discloses wherein an operator is instructed to start an engine for the starter test (i.e. this is implied because the operator knows that the engine must be started in order to carry out the starter test and col 6 ln 10-19).

With respect to claim 14, Gollomp discloses wherein one output comprises cranking voltage (col 2 ln 35-45, Fig. 6, and col 13 ln 50-58).

With respect to claims 20-22, Gollomp discloses measuring a voltage when an engine of the vehicle is revved and no load is applied (col 4 ln 1-49), when the engine is idle and a vehicle load is applied (col 4 ln 34-39 and col 12 ln 1-13), and when the engine is revved and a vehicle load is applied (col 4 ln 1-49). Please note that since the battery test is continuously running (i.e. SOC monitoring and updating, among other tests), it is implied that the battery test will measure

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a voltage when the engine is being revved (i.e. that will happen under normal operation), both with and without loads applied.

With respect to claim 25, Gollomp discloses wherein the battery test is a function of temperature (col 4 ln 1-33).

With respect to claims 30-35, Gollomp discloses wherein an output comprises battery rating (col 14 ln 57 to col 15 ln 8 and col 7 ln 65 to col 8 ln 9), measured battery capacity (col 4 ln 1-30 and col 3 ln 49-53), voltage (col 4 ln 1-3), voltage during cranking (col 2 ln 35-45, Fig. 6, and col 13 ln 50-58), idle voltage (col 4 ln 34-39 and col 12 ln 1-13), and load voltage (col 4 ln 1-15).

With respect to claim 38, Gollomp discloses wherein a voltage across the battery is recorded (col 4 ln 1-18 and see rejection of claims 30-35 above).

With respect to claim 39, Gollomp discloses wherein the battery test is used to prevent incorrectly identifying an output from the charging system test as indicating the charging system as being faulty (col 21 ln 5-30 and col 3 ln 49-57).

With respect to claim 40, Gollomp discloses an analog to digital converter (no. 122 in Fig. 7).

With respect to claim 41, Gollomp discloses including an amplifier configured to couple across a positive and a negative terminal of the battery (col 8 ln 62 to col 9 ln 11).

With respect to claims 44 and 45, Gollomp discloses wherein the starter test is a function of the battery test (col 11 ln 52-67, col 7 ln 48-53, and col 3 ln 48-63) and wherein the charging system test is a function of the battery test (col 21 ln 5-30, col 7 ln 48-53, and col 3 ln 48-63).

With respect to claim 48, Gollomp discloses wherein the microprocessor is further adapted to measure a starting voltage across the battery while a starting motor is actuated (col 11 ln 40-50 and col 12 ln 1-12).

With respect to claim 49, Gollomp discloses wherein the microprocessor provides an output indicating that the battery requires charge if a starting voltage is low and the battery test indicates that the battery is discharged (col 11 ln 15-60 and no. s211-s273 in Fig. 2A and 2B).

With respect to claims 50 and 51, Gollomp discloses wherein the microprocessor provides a cranking voltage low output if the starting voltage is low and the battery test shows that the battery is fully charged and a cranking voltage normal output if a starting voltage is normal and the battery test shows that the battery is fully charged (col 13 ln 50 to col 14 ln 19, no. s211-s273 in Fig. 2A and 2B, and Fig. 6). Additionally, the term “shows that” is still seen as an equivalent of the term “indicates” which was replaced by the amendment.

With respect to claim 52, Gollomp discloses the aspects of this claim, as noted in the rejection of claims 20-22 above, and see Fig. 2A and 2B.

With respect to claim 56, Gollomp discloses wherein the battery test does not include a load test (col 4 ln 1-33 and see explanation with rejection of claims 20-22).

With respect to claim 109, Gollomp discloses a battery charging system tester, comprising a user input, a display, an electrical connection, an analog to digital converter, and a microprocessor wherein the battery charging system tester is portable, as seen in the rejections of claims 1, 2, 25, 29, 40, 48, and 52 above.

With respect to claims 111 and 112, see the rejections of claims 109, 44, and 45 above.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gollomp (US 6,424,157).

With respect to claims 15-19, Gollomp discloses wherein the one output comprises an output equivalent to “good battery”, “good but recharge battery”, “charge and retest battery”, “replace battery”, and “bad cell- replace battery” (col 20 ln 55 to col 21 ln 5, col 10 ln 21-40, and col 12 ln 14-19, especially note the various boxes in Fig. 2A-4D which have a “message” in them). Additionally, it is implied that if you are notified that you have a bad cell or a bad battery, then it needs to be replaced, or if you have a battery with a low SOC, then it needs to be charged and retested. After further consideration, it has been concluded that although Gollomp might not display the exact copy of the message mentioned in the applicant’s claims, his outputs are equivalent to the ones produced by the applicant.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to output the messages mentioned above in the device of Gollomp, in order to provide a clear and concise explanation to the user of the battery condition and any actions that would need to be taken.

4. Claims 23, 24, 28, 36, 37, 42, 43, 47, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gollomp (US 6,424,157) in view of Roberts (US 6,570,385).

With respect to claims 23, 37, and 47, Gollomp discloses wherein DC voltages are recorded (col 4 ln 1-39 and Fig. 6) by use of a DC voltage sensor, however, does not expressly disclose wherein the charging system test includes measuring AC voltage ripple by use of an AC voltage ripple detector, wherein an output is indicative of a presence of excessive diode ripple voltage, or wherein AC voltages are recorded.

Roberts discloses measuring AC voltage ripple by use of an AC voltage ripple detector (col 8 ln 64 to col 9 ln 28 and col 9 ln 65 to col 10 ln 15), and recording AC and DC voltages by use of sensors (col 9 ln 30-40 and col 10 ln 13-30), in order to provide a means to determine if the system has excessive ripple voltage and to provide sensed voltages which are used in the testing of the charging/starting system (to help determine any problems).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to measure AC voltage ripple and record AC voltages in the device of Gollomp, as did Roberts, so that problems caused by excessive voltage ripple can be prevented while also monitoring the AC and DC voltages (which provide information as to whether or not the rest of the system is operating at it's nominal condition).

With respect to claim 24, Gollomp does not expressly disclose including a user input configured to receive a temperature.

Roberts discloses a user input configured to receive temperature (col 15 ln 63 to col 16 ln 15), in order to provide temperature information to the system which will allow a proper analysis of the system (including the battery) because temperature can greatly alter the battery characteristics.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a user input for temperature in the device of Gollomp, as did Roberts, so that more accurate results can be attained with respect to the charging and cranking/starter systems (including the battery) which would help give a proper diagnosis of the system.

With respect to claim 28, Gollomp does not expressly disclose wherein an output is printed based upon a test.

Roberts discloses an output printed based upon a test (no. 66 in Fig. 1B and col 6 ln 6-17), in order to provide a copy of the results, which could be used for reference.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include an output printed based upon a test in the device of Gollomp, as did Roberts, so that a hard copy could be stored for referencing at a later time.

With respect to claims 36 and 54, Gollomp does not expressly disclose wherein the output is indicative of a presence of excessive diode ripple voltage or wherein an AC ripple voltage more than about 130 mV indicates a faulty diode or stator in the charging system.

Roberts discloses providing an output indicative of a presence of excessive diode ripple voltage and wherein an AC ripple voltage can indicate a faulty diode or stator in the charging system (col 9 ln 21-28 and col 14 ln 2-25), in order to provide earlier notification of problematic parts, therefore helping prevent larger problems that could occur.

It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Therefore, it would have been obvious to one having ordinary skill in the art at the time the

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invention was made to indicate a faulty diode or stator in the charging system when the AC ripple voltage is more than 130 mV.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have an output indicating the presence of excessive diode ripple voltage and wherein an AC ripple voltage more than 130 mV could indicate a faulty diode or stator in the charging system in the device of Gollomp, as did Roberts, so that additional components of the system would be tested (further narrowing down the causes of different problems) and so that earlier notification of problematic parts could be provided, which would in turn help prevent larger problems that occur when an excessively variable voltage is present.

With respect to claim 42, Gollomp does not expressly disclose an amplifier coupled to the battery through a capacitor.

Roberts discloses an amplifier coupled to a battery through a capacitor (seen in Fig. 4D and col 10 ln 4-57), in order to amplify the battery test voltage, allowing various tests of the battery including internal resistance and cold cranking ampere.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to couple an amplifier to the battery through a capacitor in the device of Gollomp, as did Roberts, so that additional testing concerning battery characteristics (such as internal resistance and cold cranking ampere) could be provided, allowing the user to make a more accurate decision on the status of the battery (i.e. should it be replaced or not).

With respect to claim 43, Gollomp does not expressly disclose including a battery voltage scaling circuit, although, it could be implied that a scaling circuit exists in the device to provide the output of Fig. 6, wherein the large variations in voltage can be seen on a single screen.

Roberts discloses a battery voltage scaling circuit (col 11 ln 58 to col 12 ln 5), in order to provide proper scaling to offset any inaccuracies due to various types of connections or connection lengths being used.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a battery voltage scaling circuit in the device of Gollomp, as did Roberts, so that inaccuracies due to long connections or different types of connection can be avoided.

5. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gollomp (US 6,424,157) in view of Parsonage (US 6,037,749).

With respect to claim 26, Gollomp does not expressly disclose wherein the microprocessor is configured to determine if surface charge exists on the battery.

Parsonage discloses wherein a microprocessor is configured to determine if surface charge exists on a battery (col 13 ln 59-61), in order to avoid improperly testing the battery's characteristics (wherein those results would have been otherwise affected by surface charge).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to determine if surface charge exists in the device of Gollomp, as did Parsonage, so that more accurate results for the battery's characteristics (i.e. voltage level and SOC) could be calculated after the surface charge was gone/removed.

6. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gollomp (US 6,424,157) and Parsonage (US 6,037,749) as applied to claim 26 above, and further in view of Roberts (US 6,570,385).

With respect to claim 27, Gollomp does not expressly disclose wherein the microprocessor prompts an operator to turn on headlights of the vehicle based upon a surface

charge determination. Although, Parsonage does disclose the surface charge determination as seen in the rejection of claim 26 above. Furthermore, it is well known in the art that turning on a load such as a headlight is an efficient and quick way to remove the surface charge of a vehicle battery.

Roberts discloses wherein the microprocessor prompts an operator to turn on headlights of the vehicle (col 18 ln 60 to col 19 ln 32), in order to place the starting/charging system in a medium load or low idle condition, which provides the proper state for certain types of testing on the vehicle (to give the most accurate measurements/results).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the microprocessor prompt the operator to turn on headlights based upon a surface charge determination in the device of Gollomp, as did Roberts and Parsonage, so that the proper state for testing can be attained which would give the most accurate measurements and results, which would help properly diagnose the system.

7. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gollomp (US 6,424,157) in view of Cook (US 4,637,359):

With respect to claim 53, Gollomp does not expressly disclose wherein the microprocessor is adapted to receive an input indicating that the vehicle contains a diesel engine and wherein it waits for glow plugs of the engine to warm up.

Cook discloses wherein a microprocessor is adapted to receive an input indicating that the vehicle contains a diesel engine and wherein it waits for glow plugs of the engine to warm up (col 11 ln 4-20), in order to provide a tester that is compatible with a different vehicle type and so that the engine can be properly prepared for testing/start-up.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to adapt the microprocessor to receive an input indicating that the vehicle contains a diesel engine and wherein it waits for glow plugs of the engine to warm up in the device of Gollomp, as did Cook, so that a testing device could be provided which would have a more widespread usage (i.e. compatible with different engine/vehicle types) and wherein the vehicle would be allowed to properly prepare for a testing condition (i.e. start-up).

Response to Arguments

8. Applicant's arguments with respect to the claims have been considered but are not persuasive or are moot in view of the new ground(s) of rejection (necessitated by amendment).

With respect to claims 1 and 109, applicant argues that he was unable to identify where in Gollomp a starter test is performed on a start of the vehicle or where a charger system test is performed on a charger system of the vehicle.

Examiner respectfully disagrees for the following reasons: The citations provided above, which were provided in the previous office action (except for the addition to clarify the rejection necessitated by the applicant's amendments), are still seen as meeting the claim language. Please see the rejections above (and also see col 5 ln 5-21).

With respect to claims 2 and 3, applicant argues the elements in the dependent claims are not shown by the cited references.

Examiner respectfully disagrees for the following reasons: The user input is clearly shown in the cited reference, wherein "if the data is not already present in computer storage, it can be entered" (col 8 ln 4-5). Additionally, the section from which the citations are provided above is called "Installation", and that section also mentions the physical installation of the

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program, start of operation including initialization of the variables used on input of various data values, etc.

Concerning claims 5-8, the applicant's response (filed on 7/27/06) to the election/restriction (filed on 6/23/06) including election of Group I and Species I, wherein Species I was claim 4. It was also stated by applicant that "It is believed that all claims but 5-8 are 'readable' on the elected Species" on page 1 of the response to restriction requirement.

With respect to claims 9, 11, and 12, applicant argues that the sections cited in the rejection do not contain a relation to battery test based upon conductance, impedance, and admittance.

Examiner respectfully disagrees for the following reasons: There is an explanation in the rejections above wherein "...it is implied that the other values –conductance, impedance, and admittance) would be easily calculated due to the fact that the conductance is the reciprocal of resistance, impedance is the summation of resistance and reactance, and admittance is the reciprocal of impedance or the summation of conductance and susceptance". Therefore, as noted above, all of those values are "based" on resistance, which the reference clearly discloses.

With respect to claim 13, applicant argues that Gollomp does not imply instructing an operator to start the engine of the vehicle to perform a starter test.

Examiner respectfully disagrees for the following reasons: It is still seen as reasonable that it is implied in the Gollomp reference that the operator knows that the engine must be started in order to carry out the starter test).

With respect to claims 15-19, please see the rejection above.

With respect to claims 20-22, 30, and 32-35, the citations provided in the rejection above are still seen as reasonably meeting the claim language provided.

With respect to claim 39, applicant argues that the cited section of Gollomp does describe assigning a failure in battery charging to the charging system, however, it does not actually perform a test on the charging system itself.

Examiner respectfully disagrees for the following reasons: The citation provided in the rejection shows that the charging system itself is tested, especially of note is the testing as to whether or not the alternator is performing properly. As is well known, the alternator charges the battery and is therefore part of the charging system.

With respect to claims 44 and 45, applicant argues that he is unable to find wherein the starter test and charging system test are performed and how they could be a function of the battery test.

Examiner respectfully disagrees for the following reasons: Please see the rejections of claims 44 and 45 above, along with the rejections of claims 1 and 109, which are still seen as meeting the requirements of the applicant's claims. To clarify, in order to judge whether or not there is a starter problem or a charging system problem, the battery should be tested to make sure that is functioning properly. Then, if the battery is functioning properly but there is still a problem with the starting of the vehicle or the charging of the battery, then the problem would most likely exist with the other components of the starter or the charging system. These tests are mentioned throughout the Gollomp reference, including in the citations provided.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Piggush whose telephone number is 571-272-5978. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AP



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